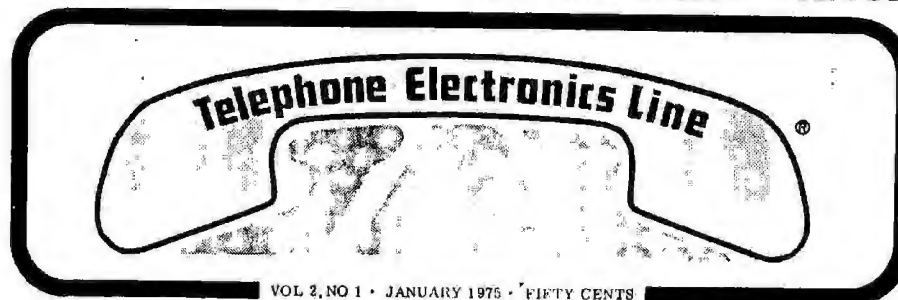


THE INTRICACY OF CREDIT CARD FRAUD



NEW YEAR '75

**MODERN
PHONE PHREAKING:**
More sophisticated
yet more vulnerable



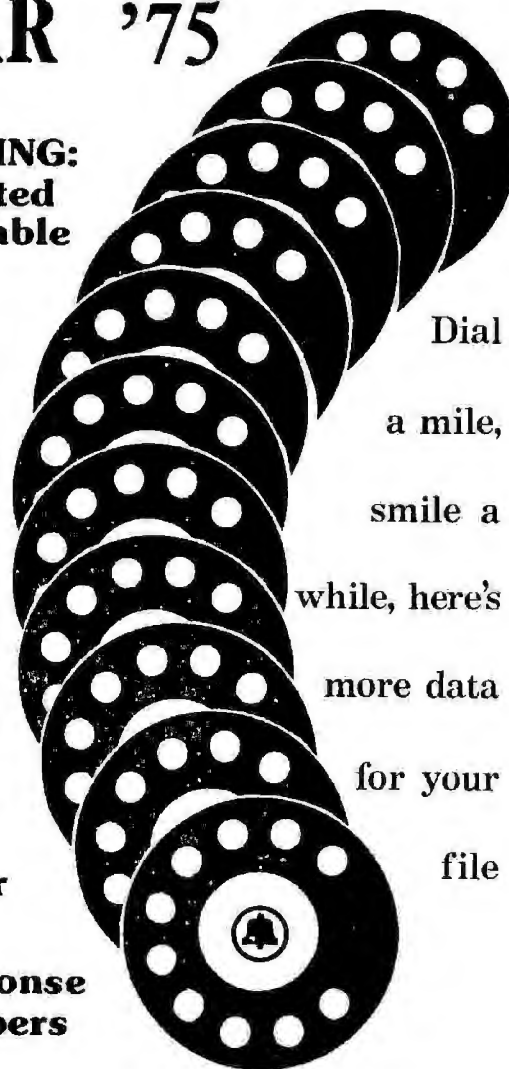
DETECTION:
How to avoid it

TOLL:
A general
introduction

**CONSTRUCTION
PROJECT:**
The Hold Button

AREA CODE 900:
It's more than a
mass calling number

**PLUS: Reader Response
Code & Test Numbers**



Dial

a mile,

smile a

while, here's

more data

for your

file



Published Monthly

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The Old TEL
We continue to grow with your support. In fact, we'll be expanding in volume 33% by next issue. In addition, you will enjoy following the multi-color diagrams, and larger cleaner type. We ask that you become an agent for TEL and sell a subscription to someone you know!



**Wishes You A
Happy New Year**

If it's TEL, it's swell!

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
Telephone Electronics Line

Editorial

Commercial Telephone Service (CTS) is a new concept which works very much in the same manner that television in America does. (As far as basic format is concerned). There are numerous opinions involved - both pro and con - however, at the present time, little has been done to design or develop such a system.

Imagine if CTS were employed in your city. There would be no telephone installation charges, repair charges, or toll charges. If CTS were employed nationwide, there would be plenty of free unlimited communication for all. Every telephone call would have an announcement that would "appear" on the conversation, sponsored by a local merchant. Your local calls would have local announcements, while toll or long-distance calls might be sponsored by National Airlines or Coca Cola.

Sound absurd? Not really. This concept has probably been employed by small telephone companies in the past, without success. It was a lack of interest with larger companies. If you, as a viewer, are interested in watching five or ten minutes. Depending on the station and the program, programs sponsored by these merchants may range from very entertaining and amusing to extremely dull and frustrating. Personally, I find most television shows are a waste of time and very non-educational. The occasional "special" are the only worthwhile programs to view. (This is not an endorsement to degrade America's television and is not intended to do so).

On the other hand, the commercials may very well be another story. They inform the television viewer on current product availability and economic situations. They demonstrate advertising techniques and consumer gullibility. In addition, they bore the hell out of some suckered souls who try to watch the program between commercials.

Now, if advertising were employed in the telephone industry as presently done with television, what effects would there be on the consumer and what changes would be made in the system?

In the first place, the consumer is already blessed with commercials on television. Why would it be so difficult to have the same on the telephone? In addition, there would be no invasion of privacy on the conversation since the advertisement would be a recorded announcement played through individual couplers into each line separately. In addition, many different announcements (one recorded right after the previous one) on a continuous loop of tape would be used, preventing the same message from being played over and over again.

The mechanical workings of such a system would not be difficult to employ. One idea would consist of the following: Every subscriber line would have a step-up transformer connected to the Tip and Ring terminals - the two wires which constitute a telephone line. This will permit low-level audio signals from the announcement machine to be stepped-up to a higher voltage and placed across the line. Since the telephone line is current limited, a high voltage signal will produce a loud, clear audio transmission. It will also step-down

By Jack Kravak
signals that the subscriber produces, such as conversation or Touch Tone signals, travelling in the opposite direction (coming from the line and going into the announcement machine) to a certain extent, this would be impossible according to form and theory. Practical limitations will permit this type of setup to work. (Many audiotapes will testify to this when they find that their high-fidelity amplifier has a reduced bass response and a lack of treble. The blame: Their amplifier uses transformers which provide a lack of efficient coupling, and consequently have a loss in transmission).

Therefore, we learn that transformers placed across every subscriber line will couple the line to the announcement machine with good results. It will also block signals creeping back into the system and isolate the lines from themselves where no crosstalk or backtalk will be heard.

Two modifications that might prove to be advantageous are:
1) Using individual amplifiers on each line instead of transformers where cost is not a factor. This will provide maximum coupling and individual gain and output control for varied subscriber loop lengths. 2) Using either the transformers or amplifiers on line-link or trunk-link circuits, instead of on each subscriber line. This too, is a cost factor which must be taken into consideration. It would cost less to have one coupling device on each line-link or trunk-link circuit rather than on each subscriber line. Since the line-link or trunk-link circuits link calling parties to called parties, when all of these circuits are busy, there would be no facilities to connect anyone together anyway. By placing the couplers to these circuits, the announcement will go to the actual connection rather than wait on a vacant subscriber line until someone uses the phone.

There are a few limitations that CTS would introduce into the industry. Probably the most noticeable of these would put many telephone operators out of a good job. The only billing that would be necessary is to the few advertisers who are using their announcements played on the lines. The telephone company would require a monthly calculation truck usage for various plans and load balancing purposes. This same equipment could be used to base advertisement rates. In addition, the postage that would be saved by sending at least one First Class piece of mail to each customer each month would total a considerable fortune.

Statistically, if the telephone companies were set up for CTS in the first place, based on present operating costs, there would be no need of a financial burden in operating this system that would subscriber billing system. Again, this calculation would be derived from current expenditures on the existing system and those predicted in CTS. No actual figures will be released in this case since this is a hypothetical situation. However, it is interesting to see such a telephone operation. It is often said that you hear what you normally watch on television on the telephone. From now on, the next best thing to being there in person is talking on the phone in long distance, whether it is courtesy of National Airlines, Coca Cola, or Ma Bell.

Modern Phone Phreaking

By Donald Simmons

From technology's standpoint, many advances have been made in today's phone system, and with these advances come advances in anti-technology, or the Phone Phreaks.

In earlier days, a "Black Box" or "Mite Box", capable of allowing the user to get calls for free without charging the calling party, were widely used. Along with this, the "Blue Box", a Multifrequency Oscillating Device which reproduces the standard Bell System trunk signaling times, is capable, when used with knowledge of the correct codes, of calling anywhere in the world. An advanced Phreak can even stack trunk circuits; say all trunks between L.A. and Miami, rendering all calls between either cities incomplete. More recently the "Red Box" was introduced, capable of reproducing the sound of electronic coin drops (2200Hz) generated by the new Western Electronic single slot pay telephones (IC types).

Armed with these 3 basic devices, an average Phone Phreak can cause thousands of dollars worth of free telephone calls, interception, and endangering of communications. It is entirely feasible (and has been done) to tie up all the trunks leading into and out of an entire city such as Bakersfield in less than 45 minutes, rendering it hopeless due to lack of communications.

With more skills, and knowledge of very complex and secret codes, it is also possible to tie up all overseas circuits, satellites included, to declare secret Military conversations, or even to monitor calls to and from the White House. The ultimate would be to, with the proper frequencies and codes, put missile installations on standby alert, and activate the Conelrad Emergency Defense Systems.

Because the abilities mentioned above are so dangerous most illegal calls should be based on some elaborate precautions.

1. Tell No One that you have tools of, or are a Phone Phreak. If nobody knows about you, then you will not become suspect due to tips, rumors, and the like.
2. Do not Blue Box from your home telephone. This is too dangerous due to the advent of certain detection techniques.
3. If you Blue Box, do so from Pay Phones only. Select your pay-phones on a random basis so as not to leave a pattern as a basis for your capture.

Some very cautious Phreaks even install thermite bombs in their Blue Boxes, which, when detonated, will reduce the Box to "Metal Soup" laced with "Plastic Spices". This, no electronic components exist to be reconstructed in a lab and then used as evidence for conviction.

In any case, the Phone Phreaks can and do take advantage of each advancement in the Bell Systems elaborate technology. With every new device or service introduced by the Bell Systems, the Phone Phreaks introduce their counterpart designed to break it down. The Phreaks even have a network of Bell System employee/spies as good as or better than the Special Agents posing as Phone Phreaks. It is notable however, that Phone Phreaking becomes harder with each passing day. Rising complexity of the telephone network demands a corresponding rise in the technical competence of the Phone Phreak, a fact which tends to take it from the hands of the general public and leave the illegal stuff up to the technically skilled. In the long run, most outstanding Phone Phreaks (and that crime does not pay indefinitely).

DETECTION: How to avoid it

By David Rees

Many of you have probably read various magazine and newspaper articles about people who were caught and convicted for the fraudulent use of a Blue Box. Naturally this leads us to ask, "How were these people detected, and what methods does the Phone Company use to catch Phone Phreaks in the act?" Actually, the Telephone Company has a hard time locating and collecting enough evidence to catch and convict a Phone Phreak, and is immensely difficult. The small percentage of Blue Boxers who are caught and convicted for the most part represents those who were not cautious or careful enough when committing the act of fraud by wire.

There are three major systems of detection used by the Tel. Co. in order to stage-out the Blue Boxers from among the multitude of average telephone callers. Each method of detection will be discussed separately and a countermeasure will be suggested.

THE INFORMER

Probably the most effective and certain method of Phone Phreak detection used by the Bell System is the lack of information from a source might call a tip, alert, pigeon, informer, or some other derogatory phrase. Sometimes last words for some Phone Phreaks are "I trust him, he wouldn't tell anyone". Even though most Phreaks decide to inform you under the right circumstances, it is my understanding that the Bell System's "informer" is to catch a Phone Phreak and to offer "a reward" if he will inform on his Phone Phreak friends. When faced with such a choice, few will "take the rap" on their own. Armed with this information, the Security Agents for the Tel. Co. write up "Black Lists" containing information on who to watch and how carefully to watch them. On this basis 2600 Hi detectors and other devices may be issued at the request of the Telephone Company.

THE 800 OVERDOSE

The Phone Company keeps a careful watch on everyone's calling records. They maintain a subroutine in the computer program which handles billing that looks for an unusually large number of 800 area code calls or 800 calls of unusual duration. When it comes across a record with these discrepancies, it is printed out with a special note to security agents. On a few occasions the Phone Company has made a computer print out of all 800 calls made from a particular number that has been connected to an 800 number for periods of time longer than 15 minutes each. The most effective remedy for this method of detection is to make all Blue Box calls from pay-telephones. However, if you are set on making such calls from your home phone you should meet certain guidelines: Do not make too many Blue Box calls, or any of them, if you need to call for long periods of time, dial a number which has a very low rate associated with it and Blue Box off it. Though it is not free, a call to New York from Los Angeles at Los Angeles to Anaheim rates represents quite a savings.

TROUBLE LOCATING EQUIPMENT

In most end offices and especially in major toll centers and long haul trunk facilities, there exists automatic trouble

Interested students, all the way down to the Junior High School level, knowledge of the science field is important. You see the development of new ideas and new pieces of equipment which will work in conjunction with the telephone system. These developments should be taking place in a spirit of full cooperation and should serve to greatly increase usage of the system. Much more so during the times when phone companies callously neglect the needs of the consumer, creating many new business and hobby opportunities for a great many people. This could do much to help this country get out of its present economic situation, helping to create many more hard-working taxpayers to help our Uncle Sam carry his present burden. I am hoping you can give my ideas some thought, as I am sure some of the top-level management in the phone system read it also.

James A Davis
Philadelphia, PA 19120

Dear James,

You have an excellent idea. The current situation with Telephone Company rules and regulations still stands where it stood years ago—owners as far as the consumer is concerned. What you have brought to our attention immediately we have decided to make new opportunities and ideas to develop. The Telephone Company has perhaps too much control over the consumer's communications and it is of all concerned to protest and bring to the attention of the management this problem. After all, telephone service is for the public who should be able to use it to the fullest.

LETTERS FROM THE READER

Dear Sirs,

I am a new subscriber to TEL. I would like to contribute some information that might be newsworthy to your readers. There is a nationwide number that anyone can dial for the latest medical reports, transportation reports, news service for H.U.D., and National Dept. Of Regional Councils. These numbers are:

U.S. J.T. 1-800-424-8807
H.U.D. 1-800-424-8820
W.D.R.C. 1-800-424-8820
A.M.A. 1-800-424-8820

The above numbers are all nationwide. You can call WATS information for further reference on these numbers. The number for WATS information is 800-355-9000. These numbers change every day, always on Wednesday and I don't know when H.U.D. changes theirs.

Abbreviations used in this letter:

U.S.D.T. - United States Dept. Of Transportation
H.U.D. - Housing And Urban Development
W.D.R.C. - Western Dept. Of Regional Councils
A.M.A. - American Medical Association
WATS - Wide Area Telecommunication Service

Ted Harris
Potsdam, NY 13676

Gentlemen:

I am a new subscriber to your wonderful little magazine, and I am hoping that there is a way in which the pages of it can be used for what I believe should be a very constructive purpose.

You see, at the outset Thomas Edison could have taken the same attitude Bell System has taken all along concerning what they term as "foreign equipment". From the purely technical standpoint, the arguments used against interconnecting equipment with telephone lines would be far more valid than the ones used by the company's representatives. I am applying all this to the present situation, with the number and variety of pieces of equipment which use electricity grew at a fantastic rate such that the use of electricity doubles every ten years.

The obvious result is that it made a vast number of business and job opportunities which are, today, simply an accepted part of our society, and has contributed toward the building of what has been termed the richest nation in the world. A great deal of thought and money has been put into it, and a very good safety code was developed, and everything was done to disseminate as much scientific and technical information on electricity as possible to interested students, even down as far as the Junior High School level. Ideas were encouraged to invent and develop new ideas and new businesses.

Setting forth this as an example to the telecommunications field, it is my hope that the Bell System can be persuaded to do a 180 degree turnaround and to adopt a similar philosophy: to disseminate as freely as they possibly can to

Dear Sirs,

When a relative asked to use my telephone I was not at all surprised as she was on the first leg of a very long trip. However, when she placed a person-to-person call to herself my eyebrows raised to say the least. It was soon clear that she was conveying information without it costing her a single cent. After two children were at home, the first part of the trip and were safe at our home. They of course, told the telephone operator that a wealth of information could be conveyed in this manner providing a code of existing and non-existing names were compiled ahead of time. The operator would then dial the code for example, would advise of a two day stopover and everybody safe and well.

A system used by High School Students was also simple but effective. Each call was placed from a pre-designated pay telephone booth. The student would dial his or her home telephone number and let the telephone ring ONLY ONCE. As virtually no telephone calls are made with one ring, the parents would know the call was from the student. The student would then dial the code for the pay telephone booth. The student of course was waiting to accept.

Edward V. Pellicciari
Hartmann, OH 97832

Construction Project

By Jack Kranyak

THE HOLD BUTTON

INTRODUCTION

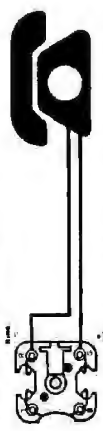
Have you ever attempted to run across the house and answer the telephone before the calling party disconnects. This will undoubtedly happen when someone calls. You answer the phone and wish to speak on another phone in the privacy of your own bedroom. You have a choice of telling the calling party to hold on while you dash across the house and answer the extension and dash back to hang up the first phone and dash a third time to speak with your party. Or, you can hang up the first phone and dash just once to the extension phone and answer it within fifteen seconds. (Most phone companies provide the called party with fifteen seconds of "reset" or "time-out" time after the phone is answered. Therefore you will probably notice that you can "hang-up" on your friend for as long as fifteen seconds and he will still be at the other end when you answer again.) This can, at times, be very annoying if you have a large home and your extension phone is in the tree house out back. In addition, if you have an office with the same problem, it would be a poor idea to go darting and dashing through the corridors to answer the other phone all out of breath, hoping your client is still on the line!

SOLUTION: Call up your local telephone company business office and request a key-phone installation with hold features. Of course, you will want lamps that indicate who is on hold. The approximate time for such an installation to be ordered and installed may be as much as three or four weeks.

ANOTHER SOLUTION: Build one yourself. It will provide you with four accomplishments: a savings in time, a savings in cost, a knowledge of the telephone system, and the personal satisfaction you will get from doing it yourself. Not to mention outwitting the Bell at all of its rate increases. (The Bell will charge you as much as \$250.00 to install it.) You will learn what key-installers take a trainee course for six months to learn, in one evening, and you will have the ambition to go on to bigger and better things.

CIRCUIT DESIGN

Consider the telephone circuit. The telephone is connected to the line by two conductors:



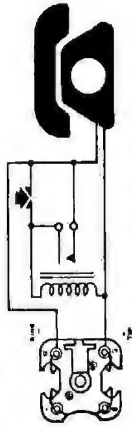
If you were to have a hold button in the circuit, it would look like this:



This type of hold circuit is by far, the simplest and easiest to install. It will put the party on hold when the switch is closed and take the party off hold when the switch is open. When the switch is in the hold position, the telephone may be hung up and the party on the other end will not disappear.

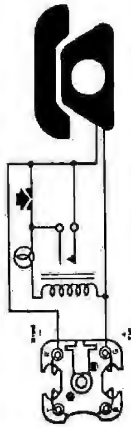
ITS ADVANTAGE: You cannot operate the hold button from a remote location. You must have a hold button at every location you wish to activate the hold from. And all hold switches must be turned off to take a party off hold. This means that you still must run around the house flipping all the hold

switches that are on, to the "off" position in order to hang up and dial another number. This is the disadvantage that this particular hold button has, and may be corrected by employing the following circuit:



This circuit works on the principle that the 48 volts normally found on the telephone line will hold the relay down, thus holding the line, until the telephone instrument is answered, consequently robbing the relay circuit from sufficient power to be held down. It's a simple circuit and found to be quite effective. A separate hold may be installed at every location where holding features are required. One thing to remember: this type of hold operates on a voltage-sensitive system. (I.E. the voltage drop across the line when the telephone becomes off-hook and requires more power is insufficient to keep the hold relay down). Consequently, if there are excessive loads present on the line, or if too many holds are activated on the same line at once, the hold relay(s) will open.

If the party that calls you is placed on hold, becomes impatient and hangs up, the hold relay will turn off automatically. This is because after the calling party hangs up, your telephone will be in a normal condition ready for standard operation. If lamps are desired to indicate when a party is on hold, the following circuit will provide this option:



Be sure that a lamp requiring very minimal current is chosen, as this too is a factor in determining relay sensitivity. Another option includes blinking lamps. There are many methods used to produce this visual signal. The Phone Company uses a device known as an interrupter. The interrupter is an electronic mechanism that opens and closes the circuit in a series of mechanical relay switches. The interrupter which has no contacts is wired in series with the lamp.

PARTS LIST

The basic parts that are required to build the hold button are a relay, a pushbutton switch, and a lamp.

The relay may vary from the standard 800 Ohm telephone-type relay. This is due to your location from the central office and various line loads on your telephone line. You must expect interference from other lines and might need to use a more sensitive relay. Probably most often, a 600 Ohm relay will do the job. Again, try experimenting with different relays until a satisfactory one is found. (A Radio Shack "Relay Surprise Pack", for example, is an excellent source of relays).

The pushbutton switch may be an SPST momentary contact type. The lamp may be any value, as long as relay operation is not affected. Usually, 2-3 volt 50ma is sufficient.

APPROXIMATE CONSTRUCTION TIME: One hour.
APPROXIMATE CONSTRUCTION COST: \$5.00.

*

TELEPHONE ELECTRONICS LINE

PAGE 10

now available for the telephone experimenter

COMPLETE CONSTRUCTION PLANS

TELEPHONE PLANS: \$3.00 each

Answering Device

Automatically answers the ringing line, plays a pre-recorded announcement, takes the calling party's message and hangs up.

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Device that the FBI uses to wiretap and monitor telephone conversations silently, from a remote location from the phone.

Call Limiter

Stop those long-distance calls made by your friends! Device disconnects all long-distance calls from your telephone line.

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Now you have the capability of recording telephone conversations automatically every time the phone is in use.

Schematics

The basic schematics and parts lists for commonly used telephones. Includes a description of the telephone network.

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Use the telephone line as a link to notify you when intrusion occurs. Great for babysitting purposes and remote applications.

Automatic Dialer

Automatically dials a stored number in its magnetic memory. Takes Touch-Tone or Dial and stores hundreds of numbers.

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Conference Bridge

Automatically puts your friends on a guest conference as they call in. Have three or four way calls from your home phone.

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Add harmony to your phone. This device eliminates conventional ringing and produces a melody with each ring cycle.

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Before you leave work, call your home and utilize this device to turn on the stove and heat your dinner. Avoids burglars too!

Speakerphone

Enjoy hands-free conversation on the Speakerphone. Similar to Bell System type, but uses two-way transmission instead.

Voice Scrambler

Talk and listen to your friends in the normal manner, but good luck if someone else tries to monitor the conversation.

ELECTRONIC PLANS: \$5.00 each

Biorefeedback Conditioner

Monitor the fluctuations that your brain produces and learn to put yourself in any mood desired. Completely harmless.

Multifrequency Encoder Network

Control over telephone line from this pocket-size unit. Learn to manipulate your telephone and speed calling rates by 500%!

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Stimulate plant growth as much as 300%. Can be used on a particular section of the plant or on the entire plant itself!

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Unique twelve-sided enclosure enhances response from any speaker. Unusual design adds to any home decor. A must for the audiophile and design engineer.

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Small, compact, easy to build camera costs only the price of the film cartridge. Plan includes proper exposure setting tables and film types that produce best results.

THE LEGAL ASPECTS OF INTERCONNECTION

The complete reference book on the legal rights of the telephone customer. \$29.95, postpaid.

This book is still in the production stage and will include the latest laws and regulations up to and including the end of February. Know exactly when and where the telephone company has the right to enter your home to inspect their lines. Know exactly what illegal telephone equipment companies. Know exactly what illegal telephone equipment companies. Know exactly what illegal telephone equipment companies.

ALL OF THE CONSTRUCTION PLANS ABOVE ARE AVAILABLE FOR \$24.95. WITH "LEGAL ASPECTS" BOOK, \$48.95. TELETRONICS COMPANY OF AMERICA, 22035 Burbank Blvd., Woodland Hills CA 91364 USA

JANUARY 1975

PAGE 11